ACCULTURATIVE STRESS, SOCIAL SUPPORT, 12-MONTH MAJOR DEPRESSIVE EPISODES AND SELF-RATED MENTAL DISTRESS IN LATINO AND ASIAN OLDER IMMIGRANTS

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by

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ABSTRACT

The increasing number of aging Latino and Asian immigrants demands a clearer understanding of depression and distress among these groups. Using data from the National Latino and Asian American Study, 495 Latino and Asian immigrants over 60 years old were assessed for levels of acculturative stress and social support, occurrence of a major depressive episode within the last 12 months (MDE) and self-rated mental distress. Aging Asian immigrants were less likely to report 12-month MDE while marginally more likely to report distress compared to Latino immigrants. Although there were significant correlations between acculturative stress and social support, social support did not buffer the effect of acculturative stress on either the probability of reporting a 12-month MDE or higher distress. Furthermore, although predicted by previous research and theory, the associations of acculturative stress and social support with depression did not differ between Asians and Hispanics. Implications for future research are discussed.

BIOGRAPHICAL SKETCH

JunMei Hu attended elementary school in Queens, New York. She was then accepted into a premier science magnet school, The Bronx High School of Science. During of which, she competed in the Intel Science Talent Search and finished as a semi-finalist at the age of 16. She graduated high school in the top 10% and attended Cornell University. In 2008, she completed her Bachelor of Science. She worked at Weill Cornell Medical College before returning to Cornell University to obtain her Master's in Human Development in 2011.

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CHAPTER 1

INTRODUCTION

Depression is fairly prevalent, yet often goes undiagnosed and untreated among older adults, particularly among aging immigrants (Casado & Leung, 2001; Mui, 1996a; Yu, 1986; Pang, 1998). Previous research has suggested a link between depressive symptoms and immigrant status (Mui, 1996b; Mui, 1996a). Several studies have found that immigrants tend to be at a higher risk for depression compared to their native-born counterparts due to stress related with immigration and acculturation (Casado & Leung, 2001; Vega, 1987; Hovey, 2000a). Within the immigrant population, the mental health status of the two largest growing immigrant populations, Latinos and Asians, are of particular interest to researchers.

Official government estimates show that by 2030 20% of the U.S. population will be 65 or older. The numbers of both Asian and Hispanic aging adults are expected to grow substantially in the next years. According to the 2000 U.S. Census Bureau, the Asian American and Asian immigrant aging population grew by 76 % from 1990 to 2000 and is projected to grow by 246 % from 2000 to 2025 (U.S. Census Bureau,1990, 2001). In the same years 2000 to 2025, the non-Hispanic Caucasian aging population is predicated to have a growth of 73%. Likewise, the Hispanic population is expected to grow 555% from 1990 to 2030, and the Hispanics will comprise 11.2% of the U.S. aging population by 2030. Currently, the Hispanic aging population is younger than other minorities and makes up only 6.4% of the aging population.

The increasing number of Asian and Latino American immigrants results in a greater demand for understanding prevalence of depression among these groups. In fact, there have been a large number of studies on depression among Latino and Asian immigrants (Mui, 1996b; Mui,

1996a; Moscicki, Locke & Rae, 1989; Krause & Goldenhar, 1992; Gonzalez, Haan, & Hinton, 2001). However, previous research usually examined the population as a whole, combining the aging population with adolescent and middle age adults. This overlooks or masks the possible unique experiences that the aging population encounters and the possible links between experiences and the depression among Asian and Latino aging adults. Limited research on older Latino and Asian immigrants has mainly focused on the stress caused by changes in the process of immigration as well as number of other factors such as level of acculturation, gender, marital status, and living arrangements (Casado & Leung, 2001; Mui, 1996a; Mui, 1996b). Although studies have hinted at a possible relationship between social support, acculturative stress and depression among older Latino and Asian immigrants, it has yet to be fully explored in the literature (Wong, 2005; Pang, 1998; Laing, 1994). Furthermore, due to lack of consistency in definitions and measurements of acculturative stress, social support, depression and self-rated mental distress across studies, it is difficult to conduct a reliable cross- ethnicity comparison. The purpose of this research is to fill in this gap of knowledge by examining: 1) the differences in depression and distress rates among Asian and Hispanic aging immigrant adults; 2) the possible moderating effect of social support in the relationship between acculturative stress and two mental health outcomes, depression and distress; and 3) possible differences in the acculturative stress, social support and depression or distress relationships between Latinos and Asians.

Depression in the Latino and Asian Immigrant Population

Yu (1986) reported that older Chinese immigrants have a suicide rate three times higher than their U.S. born Chinese American counterparts. From studies in Northwestern and Northeastern states, the estimates of depression prevalence for Asian older immigrant adults ranged from 18% to 31% (Suen & Morris, 2006; Shibusawa & Mui, 2001; Mui & Kang, 2006; Mui, 1996). For

instance, in a New York study of 407 community-dwelling Asian Americans, Mui and Kang (2006) using the General Depression Scale (GDS), reported 30.9% were mildly depressed and 9.6% were severely depressed. In the same study, comparing different Asian ethnic groups, Mui and Kang (2006) also found 64% depression prevalence among Vietnamese, 15.4% for Filipino and 50% for other older East Indian immigrants.

Previous studies of older Hispanic Americans also suggest a heightened risk for depression. The largest and most recent study, the Hispanic Established Populations for Epidemiologic Studies of the Elderly (H-EPESE), reported a 25.6% prevalence of depression, using the Center for Epidemiologic Studies of Depression Scale (CES-D), among older Hispanic adults compared to non-Hispanic Caucasians and African Americans, which ranged from 9–16.9% (Black, Markides, & Miller, 1998). Also measuring with CES-D, the prevalence of depression among older Mexican Americans has been reported to range from 13.2 % to 30% (Black, Markides, & Miller, 1998; Mościcki, Locke, Rae, & Boyd, 1989; Mendes de Leon & Markides, 1988).

Factors such as shorter lengths of residence in the United Sates, more life stresses, more financial strain, poor English proficiency, poor health, dependence on children, social isolation and lack of social support have been linked to poorer mental health in older Latino and Asian immigrants (Casado & Leung, 2001; Falcon &Tucker, 2001; González, Haan, & Hinton, 2001; Lee, Crittenden & Yu, 1996; Stokes, Thompson, Murphy, & Gallagher-Thompson, 2001). For example, Bagley (1993) found a higher rate of depression among newly immigrated Chinese aging adults compared to Chinese immigrants who had lived in the US for a longer time (Bagley, 1993). Using the Chinese Depressive Symptoms Scale, Casado and Leung (2001) also found that visiting the home country at least once compared to never visiting was a significant predictor of a higher score on the depression scale. Attachment to the home country may result in difficulties in

adjusting to the new country and thus create mental distress. Furthermore, frequent home country visits may also signal poor social attachments and support in the new country.

English proficiency is found to be a significant indicator of mental distress, although not necessarily, higher depression, among both older Latino and Asian immigrants. Older Latino and Asian immigrants with limited English proficiency tend to have poorer self-rated health and higher mental distress compared to their English proficient counterparts (Kim, Aguado Loi, Chiriboga, Jang, Parmelee, & Allen, 2011). In addition to increased mental distress, Latinos with limited English proficiency, not surprisingly, are less likely to use mental and health services and additional social support (Kim et al, 2011).

Other factors such as living arrangements may also interact with immigration status to increase risk of depressive symptoms. Wilmothilmoth and Chen (1997) showed that living alone increased depressive symptoms among immigrants compared to their non-immigrant counterparts. Living alone threatens social integration, an important component of mental health in later life that provides meaningful roles and social interactions (Pillemer & Rosalie, 2000). Furthermore, living alone may also indirectly indicate the participants' lack satisfaction with family help and support (Mui, 2001). Subsequently it is logical to infer that social support such as family cohesion and support would be significant correlates for higher depression measured by the General Depression Scale (Lai, 2004).

Contrastingly, some studies have found that immigrants are at lower risk of mental illness than their U.S. born counterparts, although it seems rates of mental illness also vary by ethnicity (Mui, Kang, Chen, & Domanski, 2003; Alegría, Mulvaney-Day, Torres, Polo, Cao, & Canino, 2007; Casado & Leung, 2001). Two studies reported no significant difference in the depression score among Chinese aging adults compared to other groups of older adults (Cheung & Dobkin

de Rios, 1982; Mui, 1998). Mui (1996) suggested that the lack of difference in depression scores may be due to the cultural differences in expression of depression; Asian older adults tend to report fewer mental health problems compared to their White counterparts because of their hesitation in disclosing problems to others as well as their tendency to express mental distress as physical symptoms. Another possible reason for this inconsistency is the differences in methodologies and measurements of depression across studies, resulting in difficulties in comparing studies across cultures and across ethnic groups. Additionally, although many studies have utilized either the General Depression Scale (GDS) or Center for Epidemiologic Studies Depression Scale (CES-D), the number of items within each scale used also varied, using either the complete scale or specific items from the scales. Thus, while exploring the relationship between social support, acculturative stress and depression, I hope that by using the same standardized measurements of all variables across all ethnic groups, I will be able to compare groups in regard to prevalence of depression, specifically, 12-month Major Depressive Episode and self-rated mental distress level.

Acculturative Stress

One of the important factors considered in understanding the prevalence of depression among Latino and Asian older immigrant is acculturation and its influence on the experience of distress. Older Asian and Latino individuals who are more acculturated to the new culture tend to report lower scores on the CES-D scale (Jang, Kim, & Chiriboga, 2005; Hovey, 2000). Gordon (1964) defined an early sociological understanding of acculturation as a process of accommodation with subsequent and irreversible assimilation into the dominant culture group.

The definition and understanding of acculturation, however, has evolved to provide more insight into the stress processes that can be associated with acculturation. Marin and Gama (1996) measured acculturative changes, using questions ranging from attitudes, beliefs and behaviors, in the original culture and the new culture separately. More recently, Berry (2003) identified four acculturation strategies --- integration, assimilation, separation, and marginalization--- which describe differences in maintenance of original culture and growth of the relationship with the new culture. Integration refers to individuals who have adopted many aspects of the new culture while still maintaining their culture of origin. Assimilation, on the other side of the spectrum, represents people who have entirely adopted the new culture. Separation represents those individuals who have entirely rejected the new culture, while marginalization occurs when neither of the two cultures is accepted. Jang and colleagues (2005) reported that individuals experiencing either integration or assimilation processes report fewer depressive symptoms compared to those experiencing separation or marginalization.

Acculturative stress and health outcomes are not only related through contextual and structural factors, they are also influenced by ethnicity and nativity. Contextual factors, such as specific individual experiences, and structural factors, such as a more system-wide influence (i.e. historic racism) can mediate the relationship between acculturation and health outcomes (Black, 1998; Casado & Leung, 2001). Furthermore, differences in nativity can represent differences in family structure, values, social support as well as other contextual and social status experiences that can impact prevalence depression among older immigrants (Mui, 2004; Gonzalez et al., 2001).

Acculturative stress has been associated with depression and anxiety among Asian and Latino immigrants (Noh & Kaspar, 2003; Finch & Vega, 2003; Hovey, 2000). The prevalence of

higher CES-D scores among older Mexican immigrants (30.4%) was higher among those who were less acculturated (36.1%) compared with U.S.-born (20.5%) and more-acculturated groups (16.1%). Gonzalez et al (2001) found that even when other factors such as education and income were controlled, the least-acculturated older Mexican immigrants were found be at a significantly higher risk for depression compared to more acculturated aging Mexican Americans (OR=1.56, 95% CI=1.06-2.13). Likewise, older Asian immigrants who were more acculturated to the host society tended to have a better mental health status compared to those who were less acculturated (Pang, 1998; Stokes et al., 2001).

The "Hispanic paradox" of favorable mental health outcomes among Hispanic immigrants, even those with low acculturation, may not necessarily apply to the older Hispanic population. There is evidence that less-acculturated, immigrant Mexican Americans report relatively lower rates of depression compared to their more-acculturated counterparts (Black, Markides, & Miller, 1998). This study however combined younger and older adults. Additionally, in another study, Krause and Goldenhar (1992) used English proficiency as an assessment of acculturation and found that older Mexican American who used more English had a lower risk for depression. Rogler, Cortes and Malgady (1991) found that differences in definitions and measurements of acculturation resulted in differences in estimates of depression due to acculturation among different ethnic groups. Furthermore, studies have not yet taken into account the possible moderating effect of other factors on acculturative stress that might relate to depression. For example, social support, shown to be beneficial to mental health, has yet to be fully examined with acculturative stress and depression among the older Latino and Asian immigrants (Cohen, 2004; Zhang, 2009). With both acculturative stress and social support associated with depression

among immigrants, it seems like a logical step to explore the relationship between these two factors in relationship to prevalence of depression among older immigrants.

Social Support

Social support is another important possible factor associated with group and individual prevalence of depression. Social support has been conceptualized as information from networks that one is loved and esteemed (Wethington, Moen, Glasgow, & Pillemer, 2000). It does not necessarily need to be explicit or tangible; perceived availability of social support serves as stress buffering mechanism (Wethington & Kessler, 1986). Individuals who are more socially isolated or do not perceive the availability of social support through either formal or informal relationships are at a higher risk of dying prematurely (Berkman & Syme, 1979; House, Robbins, & Metzner, 1982). The most commonly measured types of support are: emotional, instrumental aid or tangible, information/advice, companionship and validation. Emotional support represents having another individual express care and acceptance of the person. Tangible support refers to availability of assistance with daily household chores, transportation and financial resources. While information/advice represents availability of an individual that will provide information and advice, companionship support refers to having another individual to share activities with. Finally, validation support simply refers to having another individual provide feedback about the support recipient.

Individuals have layers within their social support structure: starting from the focal individual, then to intimate ties like marital relationships and immediate family members, and further out to extended family and friends, and finally to community ties (Lin & Ensel, 1999). These different levels of social support impact mental health differently. Lin & Ensel (1999)

showed that intimate ties are the most strongly associated with distress compared to the other layers of social structure. Studies on Asian immigrants have reported mixed findings about the relationship between family support and cohesion, and mental health. Family and social cohesion, defined as affective involvement with family and social circles and thus perceived mutual support, is often used as a measurement of social support among Asian Americans and other groups (Zhang, 2009). For Asian immigrants, family cohesion has been shown to have an independent and significant impact on self-rated physical and mental health after controlling for socioeconomic status and other immigration-related factors. For example, older Asian immigrants are largely dependent on their family for actual and tangible support and friends for information, advice and companionship (Wong, Yoo, & Stewart, 2005). On the other hand, Asians are more likely to view a person as a relational entity, interdependent with others, and thus emphasis is placed on maintaining harmony within the social group. Therefore, Asians are less likely to seek social support for a particular problem at the risk of disrupting the group harmony (Hsieh, 2000). In fact, Liang and Bogat (1994) found that received social support had a negative effect for Asians, making Asians feel more distressed. This negative effect of received social support may not be applicable to older Asian immigrants, who may be following the norm of filial piety and are expecting social support later in life (Bond & Hwang, 1986). Ho (1994) had shown that the more emotional support older Chinese adults received, the less likely they were to experience depressive symptoms. In fact, despite their initial hesitation in asking for help, older Chinese and Korean immigrants seek help from outside sources such as ethnic churches and local government agencies (Casado & Leung, 2001).

There is also evidence that social support is associated with better mental health among low-income Latino immigrants (Galea, Tracy, Hoover, Resnick, & Kilpatrick, 2004). The emotional

bonds associated with family and social cohesion is often used to measure social support (Rivera, 2007; Vegam Kolody, Valle, & Weir, 1991). In general, family support has been found to be beneficial to mental and physical health (Bird, Canino, Davies, Zhang, Ramirez, & Lahey, 2001; Page, 2004). Family support serves as both emotional and structural support (Thoits, 1995). For example, Hovey and King (1997) identified family cohesion, within Latino families, as a stress buffering factor. In Latino families with a member with mental illness, the presence of warmth and love was associated with preventing relapses (López, Hipke, Polo, Jenkins, Karno, Vaughn, & Snyder, 2004). It is unknown whether such protection is also operating for aging Latino adults. Family conflicts across generation could increase emotional distress and other health risk behaviors (McQueen, Getz, & Bray, 2003; Tschann, Flores, Marin, Pasch, Baisch, & Wibbelsman, 2002) and thus reduce the protective mechanisms of family support. Hovey and King suggested that acculturation may disrupt the cohesive bonds of the family and friends, thus limiting the stress buffering effect (1996).

In addition to family support and cohesion, friend support and neighborhood cohesion, the two outer layers of social support, can also serve as a positive influence on mental health (Kawachi & Berkman, 2000). In fact, there is evidence showing that friend support may have a greater impact on mental health for Latinos than family support (Rodriguez, Myers, Morris, & Cardoza, 2003; Vega, Kolody, & Valle, 1987). Likewise, Asians, with a more collective orientation, heavily rely on extended family for support (Slonim, 1991). Compared to Caucasians and other ethnic groups, Kim and Mckenry (1998) found that Asians are more likely to spend evenings with friends and relatives, and in recreational centers. Neighborhood cohesion also provides social support that is beneficial to mental health among Latinos (Hendryx & Ahern, 2001; Rosenheck, 2001).

Possible Cross-cultural Similarities and Differences among Asians and Latinos

Filial piety stemming from Confucianism refers to the responsibilities a child has for an aging parent, ranging from material to emotional support. Research on the role of filial piety has found conflicting results on the helpfulness of filial piety on psychological development and well-being. For example, filial piety has been correlated with better intergenerational relationships, lower levels of family conflicts, and greater financial, physical and emotional support for aging parents (Lawrence, Bennett, & Markides, 1992; Ishii-Kuntz, 1997). However, filial piety seems to have a more negative impact on the child's psychological well-being. Filial attitudes have also been found to be positively correlated with parental control and inhibition of "children's self-expression, self-mastery and all-round personal development" (Ye, 2003 pg 215). Likewise, familism, defined as prioritizing family over individual, is considered a hallmark of Hispanic culture. Familism has been shown to act as a protective shell for adolescents against drug and alcohol abuse (Ramirez, Crano, Quist, Burgoon, Alvaro, & Grandpre, 2004). "Most striking…[are] the similarities between the construct of 'filial piety' and [Hispanic] concept of 'familism': attachment and loyalty of individuals to their families" (Kao & Travis, 2005 pg 682-683). However, there has been insufficient research on the psychological impact of familism on the aging parent within the Hispanic community. Many studies have focused on the mental status of the caretakers. There is a growing number of studies indicating elder abuse among the Latino community (Gordon & Brill, 2001). This suggests a possible difference between Asian and Latino aging adult's mental status, despite similar family-oriented cultures. Despite similarities in social compositions in aging Latino and Asian adults and family oriented cultures, with higher rates of elder abuse and neglect, poorer physical health, higher acculturative stress and less

reluctance to report depression and distress, Latino adults are likely to report higher depression and self-rated mental distress.

There, however, may be fewer cross-cultural difference in terms of social network composition among the aging Latino and Asian immigrants. Studies have found that a more limited expected future time increases preference for emotionally close social partners similarly across cultures (Fung, Lai & Ng, 2001; Lang & Carstensen, 2002). Socioemotional selectivity theory explains the changes in social network composition as individual ages (Carstensen, Isaacowitz, & Charles, 1999). An older adult, perceiving future time as limited, will value emotionally close social partners, rather than peripheral social partners, who are more likely to provide stable emotional support and connection. In fact, studies have found that older adults are more likely to have a higher proportion of family members in their social networks compared to younger adults (Carstensen, 1992). Therefore, social support, acculturative stress, depression and distress model may differ for aging adults compared to younger adults.

The Present Study

Although research has emphasized the importance of acculturation and social support among immigrants in preventing or moderating risk of depression, very few studies have examined all of these factors among aging Latino and Asian immigrants. I believe this is particularly relevant now with pending demographic changes, including the rapidly aging population and the increasing minority population in the US. Asians and Hispanics are expected to have the highest rates of increase in the population.

It is also particularly important to study the aging population separately. Studies have shown that older adults tend to compose their social networks differently compared to younger adults,

with higher emphasis on closer partners; hence social support may act differently for each age group. With previous literature in mind, I hypothesize that social support will moderate the effect of acculturative stress on the experience of depression. Older Latino and Asian immigrants who have higher perceived or actual social support will be less likely to experience negative impacts from acculturative stress. Thus, using the National Latino and Asian American Study (NLAAS) dataset, this study intends to examine three hypotheses:

- Hypothesis 1: whether there are significant differences between Asians and Hispanics in the prevalence of 12-month major depression disorder and self-rated mental distress. I predict there will be a significant difference in the prevalence of 12-month major depression and mean distress level between Asians and Hispanics, with Hispanics more likely to report 12-month major depression. I also predict that older Hispanics will report higher self-rated mental distress than older Asians.
- Hypothesis 2: whether social support buffers the effect of acculturative stress on prevalence of depression or self-rated mental distress levels. I predict that social support will buffer the relationship between acculturative stress and prevalence of 12-month major depression disorder as well as level of mental distress.
- Hypothesis 3: whether there are significant differences between Asian and Hispanics in the associations between depression or distress level and acculturative stress and social support. I predict that social support and acculturative stress will have a different relationship with 12-month major depression disorder and level of distress among Asians compared to Hispanics.

In the dataset I used for this study, 12-month Major Depressive Episode, adopted from the World Health Organization Composite International Diagnostic Interview, was used to detect the

presence of a major depressive episode in the past 12 months. Self-rated mental distress level is also used to assess mental distress. The dataset contains a 10-item scale to measure acculturative stress. The dataset also contains scales measuring family cohesion, family support, friend support, emotional support (sum of family support and friend support) and social cohesion (Zhang, 2009). For the purpose of studying older Latino and Asian immigrants, only participants 60 years of age or older are included, yielding a total of 211 older Asian and 287 older Latino immigrants. I hope that this research will clarify some of the inconsistencies found in literature regarding risk of depression among the aging population, particularly among Latino and Asian immigrants.

CHAPTER 2

METHODS

The National Latino and Asian American Study (NLAAS) is a nationally representative community household survey that was designed to estimate the prevalence of mental disorders and rates of mental health service utilization by Latinos and Asian Americans in the United States. The NLAAS dataset consists of 2,554 Latino respondents and 2,095 Asian American respondents. The dataset includes a number of ethnic subcategories: Puerto Rican, Cuban, Mexican, Other Latinos, Chinese, Vietnamese, Filipino, and Other Asians. The full sample design and survey methods of the NLAAS have been described in previous studies (Alegría, Mulvaney-Day, Torres, Polo, Cao, & Canino, 2004; Heeringa, Wagner, Torres, Duan, Adams, & Berglund, 2004). The core survey was largely developed from the World Health Organization's expanded version of the Composite International Diagnostic Interview developed for the World Mental Health Survey Initiative. This dataset is de-identified, publicly available and distributed by the National Institute of Mental Health Collaborative Psychiatric Epidemiology Survey through the Interuniversity Consortium for Political and Social Research at the Institute for Social Research (ICPSR), University of Michigan.

Participants

City or contiguous census blocks were selected based on population density, then housing units were sampled within each block and one adult was sampled from each selected housing unit. After the initial sample recruitments, there were 3,620 main respondents and then 1, 029 secondary adults were recruited from previously sampled households. The weighted response

rate was 75.7% (77.6% for Latinos, 69.3% for Asians) among the main respondents. The final response rate for the second adult interviews was 80.3% (82.4% for Latinos, 73.7% for Asians).

I include participants between the ages of 60 and 97 from both main and secondary respondents. In the dataset, there were 616 individuals between the ages of 60 to 97 and 498 were immigrants: 68 (32 females) Vietnamese, 71(37 females) Filipino, 48 (24 females) Chinese, 24(13 Females) "Other Asian", 177 (95 females) Cuban, 47(26 Females) Puerto Rican, 24 (18 cemales) Mexican and 39 (29 females) "other Hispanics" (see Table 1). Among these participants, 495 individuals provided data on acculturative stress. The 495 are used for the analyses presented below.

Measures

Sociodemographics. Sociodemographic measures included marital status, gender, age, ethnicity (Vietnamese, Filipino, Chinese, "Other Asian", Cuban, Puerto Rican, Mexican and "other Hispanics"), nativity status (U.S. or foreign born, years of residence in the United States (0-5, 6-10, 11-20, 21 or more years, U.S. born), verbal fluency in English(self-rating of ability to speak English), and age at migration (12 year or younger, 13-7 years, 18-34 years, 35 year or older, U.S. born). Ethnicity was recoded as dummy variables, Asian vs. not (Hispanics), Vietnamese vs. not, Filipino vs. not, etc. Marital status was recoded into three dummy variables of married, divorced/separated/widowed, never married.

12-month Major Depressive Episode. The 12-month Major Depressive Episode was adopted from the World Health Organization Composite International Diagnostic Interview to detect the presence of a major depressive episode in the past 12 months (WHM-CIDI; World Health Organization, 1998). This diagnostic instrument, also based on the criteria of the

Diagnostic and Statistical Manual, Version 4 (DSM-IV), was used to estimate the prevalence rates of depressive disorders across ethnic groups. Participants must present a total of 5 symptoms, one which must be depressed mood or loss of interest, for at least 2 weeks. The symptoms must be present every or most days for the two weeks or for all or most of every day. Other symptoms include significant (>5% body weight) weight loss or gain or change in appetite, insomnia, fatigue, psychomotor agitation, feelings of worthlessness, difficulties in concentration, and thoughts of suicide. Hereafter 12-month Major Depressive Episode will be referred to as 12-month depression.

Self-rated mental distress. Respondents were asked "how would you rate your overall mental health" (1=excellent, 5=poor). For statistical analysis, the mental health variable was recode to reflect distress level, such that 5= high level of distress and 1= low distress.

Acculturative stress. A 10-item scale was adapted from the Mexican American Prevalence and Services Survey (Vega, Kolody, Aguilar-Gaxioloa, Alderte, Catalano, & Caraveo-Anduaga, 1998). Respondents answered questions (0=no, 1=yes) regarding: whether or not they felt guilty for leaving behind family and friends; living in the U.S. have limited their contact with family/friends; feel the same level of respect as they had in their country of origin; have difficulties interacting with others because of their language; are treated badly because of their language skills; have difficulties finding work because of ethnicity; were questioned about legal status; have concerns of being deported; and avoid seeking health services due to fear of immigration officials. The 10 questions were summed. The acculturative stress measure has a range of 0-10, with zero indicating the least and 10 the most acculturative stress.

Social Support

Social support is measured using five scales, family support, friend support, emotional support (which is a sum of friend support and family support), family cohesion and neighborhood social cohesion.

Family support. The respondents were asked how often they talk on the phone or get together with relatives (1=most every day to 5=less than once a month), how much the respondent can rely on relatives for help with a serious problem (1= a lot to 4=not at all and how much the respondent can open up to family and talk about worries (1= a lot to 4=not at all).

Friend support. The friend support scale consisted of three parallel items as family support that assessed the respondent's ability to rely on friends for emotional support.

For statistical analysis, the frequency on the phone was recoded to reflect 5= most every day and 1=less than once a month, the other two responses were recoded to reflect 4=a lot and 1= not at all, so that a higher score represents higher family or friend support. Reliability was adequate (alpha = .74, 0.76 respectively). Each response within family or friend support was standardized to z-score and then combined and re-standardized to form the family or friend support variable. These two measurements, family and friend support, serve as an assessment of the respondent's ability to rely on others for emotional support (Kessler, Barker, Colpe, Epstein, Gfroerer & Hiripi, 2003). Then to create the **emotional support variable**, the individual 6 standardized questions were summed and re-standardized to z-scores. Reliability was adequate (alpha = .80).

Family cohesion. This measure was developed from the Circumplex Model of Marital and Family Systems (Olson, 1986), respondents responded to (1=strongly disagree to 4=strongly agree) the following items: "Family members like to spend free time with each other," "Family members feel very close to each other," and "Family togetherness is very important." Reliability

was adequate (alpha = .84) and the individual responses were summed. The resulting scale ranges from 3–12, and a higher score indicated greater family cohesion.

(Neighborhood) Social cohesion. The interview asked if people in the neighborhood can be trusted and if they get along with each other (Sampson, Raudenbush, & Earls, 1997), if the respondents have neighbors who could help in an emergency (National Institute of Mental Health, 1994) and if the respondent thinks people in the neighborhood look out for one another (Bearman, Jones, & Udry, 1997). The scale varied from 1= very true to 4= not at all true. For statistical analysis, responses were re-coded to reflect 4=very true and 1= not at all true, in that a higher score represents higher social cohesion. Reliability was adequate (alpha = .72) and the individual responses were summed. The resulting scale ranges from 3–12, a higher score indicating greater neighborhood social cohesion.

Statistical Analysis

Descriptive analyses were conducted to examine the intercorrelations of 12-month major depressive episode, the one item self-rated mental distress item, acculturative stress, and the five social support measures (see Appendix I). To examine our first hypothesis, the prevalence of 12-month major depressive episode among the various sociodemographic variables was inspected and ANOVAs were conducted in order to test if any one ethnic group had significantly higher reports of 12 month depressive episode and self-rated mental distress, in comparison to the remainder of the sample as a whole. I also compared all those of Asian ethnicity to all of those of Hispanic ethnicity. The differences in mean distribution of age, household size, household income, and verbal fluency in English was determined among those who experienced 12-month major depressive episode compared to individuals who were not depressed. The mean distress

level was also calculated across sociodemographic and ethnic groups. One-way ANOVA was used to determine significance of the mean differences between the dummy ethnic group variables on prevalence of 12-month Major Depressive Episode and self-rated mental distress (see Table 2- 3). Gender, marital status and work status were also examined in determining the prevalence of 12-month Major Depressive Episode and self-rated level of mental distress within each demographic group (see Table 4). Cross tabulations of the prevalence of 12-month major depressive episode among the different ethnic group were examined and chi-squares calculated. Correlations between acculturative stress, family support, friend support, emotional support, family cohesion, neighborhood social cohesion, 12- month MDE and self-rated mental distress was also reported (see Appendix I-III)

Logistic regression models were conducted to examine the main effects of Acculturative stress, family cohesion, family and friend support, emotional support and neighborhood social cohesion variables on 12-month Major Depressive Episode, net of sociodemographic controls (age, female, Asian, divorced/ separated/ widowed, never married, employed, household size and income, and verbal fluency in English). The social support variables were entered one at a time, then in theoretically relevant combinations (see Table 5).

To test my second hypothesis that social support buffers the association of acculturative stress on the outcomes, I calculated multiplicative interactions between acculturative stress and each of the five social support variables, family support, friend support, emotional support, family cohesion and social cohesion These terms were included in the models after the main effects of acculturative stress and social support were estimated. In addition, to test my third hypothesis that there may be a difference in the relationship between social support and 12-month major depression disorder among Asians compared to Hispanics, interaction terms

between the five measures of social support and the dummy Asian variable were added to the logistic models (see Table 6). Furthermore, to test our third hypothesis, to test whether acculturative stress has a different relationship with 12-month major depression disorder among Asians compared to Hispanics, we also included an interaction term between acculturative stress and the dummy Asian variable in our logistic models (see Table 6).

Ordinary least squares regression models with the same controls for sociodemographic measures were used to model the association between social support, acculturative stress and self-rated mental distress. To examine our second hypothesis, the buffering effect of each social support measure on acculturative stress, interaction terms between acculturative stress and the five social supports were also examined; this allows us to understand if acculturative stress differs with each social support measure (see Table 7). Additionally, to test our third hypothesis, examining the difference in the relationship between acculturative stress, social support and level of distress across the two major ethnicities, Asian and Hispanics, interaction terms between acculturative stress, the five social support measures and dummy Asian variable were included to the linear regression models.

CHAPTER 3

RESULTS

Correlates of 12-month Major Depressive Episodes (MDE) and Self-rated Mental Distress Level

There were significant correlations among sociodemographic factors and past year major depressive episode. Being female, Asian, Filipino, Other Hispanic ethnicity, being married, being divorced/separated/ widowed, being employed, total number of household members, household income and verbal fluency in English were all significantly correlated with likelihood of 12-month major depressive episode as well as self-rated mental distress. The prevalence of a depressive episode in the past year was higher among females, divorced/separated/widowed, and those with a smaller household size in our older participant sample. The significant sociodemographic items were thus used as control variables in subsequent logistic and linear regression models (see Appendix Table I).

There was also a significant positive correlation between acculturative stress and 12-month major depressive episode (r=.114; p=.011). On the other hand, 12-month major depressive episode was negatively correlated with family support, friend support, family cohesion and social cohesion (r= -.017, -.065, -.220, -.025; p= .709, .152, .000 and .596 respectively). Acculturative stress was also negatively correlated with family support, emotional support, family cohesion and social cohesion (r = -.109, -.112, -.121, -.185; p=.014, .014, .007 and .000 respectively).

Ethnic Differences in Prevalence of 12-month MDE and Self-rated Mental Distress Level

In examining the prevalence of 12-month major depressive episode and self-rated distress across different ethnic groups in comparison to all other groups combined, cross tabulation of ethnicity and depression showed that the rate of 12-month major depressive episode in Asians was 2.4% compared to Hispanics who reported an 11% rate of depression (p=.000). Each ethnicity, recoded as a dummy variable, was contrasted to the remainder of the sample. The prevalence of 12-month major depressive episode in Filipinos was significantly lower than the other groups combined (p=.038). All other Hispanics had a higher rate of 12-month major depressive episode compared to the rest of the groups combined (p=.047). Other ethnicities were not significantly different in contrast to the combined groups (see Table 2). In regard to self-rated mental distress, Vietnamese participants reported a higher mean distress level in comparison to the rest of the ethnic groups (M=3.12; p=.000). Likewise, the Chinese also showed a significantly higher mean distress level (M=3.08; p=.001). Filipino, all other Asian, and all other Hispanics reported significantly lower distress levels (see Table 3).

Logistic Regressions: Episodes of Depression

To examine the association between acculturative stress, measures of social support and 12-major depressive episode, logistic regression models were estimated (see Table 5 Model A through H). Containing only the control sociodemographic variables (age, gender, marital and work status, household size and income, and verbal fluency in English), model A shows a modest association between Asian ethnicity and lower probability of reporting a depressive episode (OR=.331; p=.033). After controlling for the sociodemographic variables, Model B adds acculturative stress as an additional explanatory variable. Those with higher acculturative stress were 26% more likely to express depressive symptoms in the past 12 months (OR= 1.26; p=.046). Model C contains all the variables from model B, but adds family support. Those with higher

family support were significantly less likely to report a depressive episode (OR=.679; p=.05). In Model D, friend support exhibits significant associations with 12-major depressive episode, in the predicted direction (OR=.642; p=.017). Likewise, in Model E, emotional support was significantly associated with less reporting of depressive episodes (OR=.583; p=.008). Family cohesion, model F, showed a significant association with depressive episodes as well (OR=.742; p=.001). In the combined model G of sociodemographic variables, acculturative stress, family cohesion and family support, family cohesion was significantly associated with the decreasing probability of reporting of a depressive episode in the past 12 months (OR=0.760; p=0.007). Finally, in model H combining acculturative stress, family cohesion and emotional support, family cohesion was significantly associated with a lower probability of a depressive episode (OR=.782; p=.013). Neighborhood social cohesion, not included in the table, was also examined separately with acculturative stress as well as with other two social support measures, but was not significantly related to the outcome.

Social support and ethnicity variables: buffering effect in 12-month MDE models. To test my hypothesis that the social support measures have a buffering effect on acculturative stress, additional logistic models were estimated. However, the interactions were not significant in any instance. Furthermore to examine whether there is a different relationship of acculturative stress and social support to 12 month depressive episode by ethnicity, I included interactions of Asian ethnicity with acculturative stress, family support, friend support, emotional support, family cohesion, and social cohesion in six additional models. Four additional models were estimated to examine if Asian ethnicity has a moderating effect on acculturative stress, family support, family cohesion and social cohesion. Table 6 Models AI to EI shows that there is no moderating effect

of Asian ethnicity on the relationship between the outcome and acculturative stress and the five measures of social support.

Linear Regressions: Self-rated Mental Distress

Models regressing self-rated mental distress on sociodemographic variables, acculturative stress, family support, friend support, emotional support, family cohesion and social cohesion were also estimated (see Table 7 Models AM through EM). Similarly to the previous logistic regression with 12-month major depressive episode as an outcome, Asian ethnicity was a significant predicator of self-rated mental distress, with Asians reporting lower self-rated mental distress compared to their Latino counterparts. However unlike the logistic regression model of depressive episodes, in this linear regression model, employed and verbal fluency in English were significant predicators of self-rated mental distress. Both employment and higher self-rated ability to speak English were associated with lower self-rated mental distress level. Acculturative stress was not significantly associated with distress, but both family support and cohesion were significant (p-value =0.089, .002, .013 respectively). Social cohesion was not significantly related to distress.

Social support ethnicity variables: buffering effect in self-rated mental distress level models. Five additional models were estimated to examine the interaction between acculturative stress, family cohesion and Asian ethnicity, as well as acculturative stress and the three social support measures. None of the interaction terms was significant.

Post-hoc Analyses

In light of the findings above, I examined additional factors that may explain why not all of the predicted relationships hold. Among the older immigrants who took part in the study I used,

68% had been in the U.S. for 20+ years. Those who were in the U.S. for more than 20 years were less likely to report an episode of depression and also reported better self-rated mental distress. There were, however, no significant correlations between length of residence in U.S. less than 20 years and acculturative stress, and the social support measures. It may be that social support has a critical buffering effect on the relationship between acculturative stress and depression during an earlier period of immigration. Obtaining data from recently immigrated older adults might give a better understanding of how the presence (or lack thereof) of social support influences acculturative stress and depression. Acculturative stress was also examined in the adults younger than 60 (M=2.618; S.D. =1.57) and it was not significantly different from acculturative stress reported in the 60 year or older population (M=2.333; S.D. =1.37).

CHAPTER 4

DISCUSSION

Research on acculturative stress and depression has mainly been focused on the younger immigrant population, who have immigrated more recently and often without families. With the increasing number of older immigrant adults in the United States as well as the abundant previous research suggesting a high prevalence of acculturative stress among aging immigrants, there is more interest in understanding the relationship between acculturative stress and depression.

Consistent with previous research, I found that 12-month Major Depressive Episode to be more prevalent among women than men in this sample (Mui, 2004; Hovey, 2000a). However, after controlling for other sociodemographic factors in regression analysis, the gender association is less prominent (Mui, 2004; Kuo & Guan, 2006). This is also true in our regression models. Perhaps gender differences in relation to depression in older immigrants could be attributed to gender-related psychosocial and contextual factors (e.g. household income, education, and acculturation) rather than other differences between men and women. Also correlated with higher depression episodes in our study, being divorced/separated/widowed, and having a smaller household size reflected the living arrangements of these older adults. Previous studies showed that older adults living alone showed more depressive symptoms compared to those who live with others (Mui, 2004; Hovey, 2000a). Stokes et al (2001), however, found that a larger proportion of older Chinese Americans who were living with their children were experiencing more depressive symptoms compared to those who were living alone. It may not necessarily be

the result of the living arrangement, but rather other factors such as family cohesion, support and satisfaction with the living arrangement that is associated with depression.

In this paper, I tested three hypotheses. The first hypothesis was that there would be a significant difference in prevalence of the 12-month major depressive episode and self-rated distress level among Asians compared to Hispanics, with Asians reporting fewer episodes of depression and lower distress. This hypothesis was partially supported; Hispanics were more likely to report depressive episodes as well as lower self-rated distress. Our analyses showed that Asians are less likely to report a 12-month major depressive episode in comparison to their Hispanic counterparts. Asians were, however, marginally more likely to report higher distress levels compared to Hispanics. Waidmann and Liu (2000) previously showed that in comparison to Whites and other racial groups, Asians have been found to report lower distress. It is difficult to do a cross study comparison because Waidmann and Liu used 65 or older adults, who were using Medicare, to assess disability and distress levels. Aging adults who are eligible and utilizing Medicare may have a different perception of distress compared to those who are not qualified or utilizing Medicare. Furthermore, Waidmann and Liu had a disproportionally smaller sample size of Asian aging adults in the study compared to the sample size of Whites and Hispanics.

In exploring my second hypothesis that social support will buffer the relationship between acculturative stress and prevalence of 12-month major depression disorder or the level of distress, we first looked at the main effects of social support. In this sample of older people higher acculturative stress increases the likelihood of reporting a depressive episode in the past 12 months by 26% (Gonzalez et al., 2001). It is difficult to compare my findings to previous studies because differences in depression and acculturative stress measures yield non-comparable

estimates of depression prevalence and the relationship between social support and depression. The odds ratio of depression associated with acculturative stress was slightly reduced by adding the social support variables. Each of the five social support variables had a significant negative effect on the reporting of 12-month major depressive episode as well as self-rated mental distress. The models including interaction terms of acculturative stress with each social support measure found, however, that social support did not "buffer" the association of acculturative stress with the outcome. Thus, hypothesis 2 was not supported. None of the five social support measures buffer the effect of acculturative stress on the likelihood of the 12-month major depression episode or higher self-rated mental distress. It may be that among these older adults, the majority of whom have resided in United States for over a decade, the "buffering" effect social support on the association of acculturative stress and depression or self-rated mental distress had diminishing effect over time. Future studies looking at social support, acculturation and other DSM disorders may be useful in understanding if social support is related to acculturation via different pathways.

The interaction models along with the main effect models of the social support variables also suggest that social support may be either directly or through other mechanisms affecting the probability of a 12-month major depressive episode and level of distress. For example, Cohen (2004) suggests that higher perception of social support will alter how one appraises a difficult situation and increase one's ability to cope. This would have a direct impact on experiencing an episode of depression or on distress. Social support has also been linked with less stress exposure, greater feelings of control and self-efficacy and self-esteem (Atienza, Collins, & King, 2001; Russel & Cutrona, 1991). These previous findings, along with our study, may add additional evidence that social support has a direct impact on reporting or experiencing an episode of

depression or distress. Furthermore, in future studies, examining the possible buffering effect of social support on other stressors may provide more insight into the causes of depression among older immigrants.

Furthermore, my third hypothesis stated that social support and acculturative stress have different relationship s with 12-month major depression disorder and level of distress among Asians compared to Hispanics. This hypothesis was not supported. My regression models of 12-month major depression episode and self-rated mental distress including interactions suggests that Asian, compared to their Hispanic counterparts, may not benefit more from higher social support such as strong family support and family cohesion. Supported by previous literature, our data also indicate Asians and Hispanics are equally likely to have stronger familial and social support compared to other racial groups (Hayward & Heron, 1999; Waidmann & Liu, 2000). Perhaps the health advantage of Asian Americans that are attributed to strong family relationships and intergenerational ties are also applicable to Hispanics immigrants (Chung, 1991). Future studies can also consider combining and contrasting these two ethnic groups in studying social support.

More interestingly, in comparison to depression, factors associated with self-rated mental distress were not necessarily the same factors that were associated with a higher likelihood of a 12-month major depression episode. As indicated in previous research with a younger immigrant population, higher proficiency in English as well as being employed was significantly correlated with lower self-reported mental distress level. Our results show this is also true for the older immigrant population in respect to self-rated mental distress, but not with depression. A recent study found that Asian men who were proficient in English had lower rates of 12-month mental disorders compared to their non-proficient counterparts (Takeuchi, Zane, Hong, Chae, Gong,

Gee, Walton, Sue, & Alegría, 2007). This study was however not exclusive to older adults. Our results indicate that proficiency in English among older adults was significantly correlated with depression but was not a significant predictor for depression after controlling for other sociodemographic factors. However, the link between proficiency in English among older adults and their self-rated mental distress may suggest other mechanisms at play, for example their level of agency. Those with higher proficiency in English are perhaps more likely to seek health services and support or their perception of their abilities in general is higher compared to those who are less proficient (Kim et al, 2011). Employment was also not significantly correlated with depression, further indicating that interpretation of one's mental distress is influenced by different factors among the older immigrant population.

Limitations and Further Directions

The conceptual model of relationships among acculturative stress, social support and depression or self-rated mental distress among older adults needs further development. There were at least two limitations in this study that should be addressed with further research; other stressors associated with depression, and longer length of residence in the U.S. Although higher acculturative stress levels were strongly correlated with higher distress levels, other stressors, such as financial and physical health, have also been identified as correlates of poorer mental health. Future studies should examine the effects of social support on other additional stressors and its impact on self-rated mental distress or depression. Having participants with shorter length of residence in the U.S. can give a more comprehensive understanding how social support, stressors and depression may change over time. These are limitations that cannot be overcome in the dataset I used.

My study also found that (neighborhood) social cohesion was not a significant correlate for depression or self-rated mental distress, and subsequently was not significant in the logistic and linear regression models. As suggested by previous literature, older adults may value familial connections more than the broader social cohesion as measured in this study (Lin, Ye, & Ensel, 1999). It would be interesting to examine the differences in the relationship of stressors, social support and depression among younger adults compared to older adults. Perhaps, social cohesion will have a bigger impact on younger adults who are more active in the community, as compared to older adults.

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Table 1

Ethnic Distribution of 60-97 year old immigrants, n=498

	Females	Total
Asians		
Vietnamese	32	68
Filipino	37	71
Chinese	24	48
Other Asians	13	24
Hispanics		
Cuban	95	177
Puerto Rican	26	47
Mexican	18	24
Other Hispanics	29	39

Table 2

Prevalence of 12-month Major Depressive Episode

	Percentage	n
All Asians	2.4**	211
Vietnamese	2.9	68
Filipino	1.4 *	71
Chinese	4.2	48
Other Asians	0	24
All Hispanics	11**	287
Cuban	9.0	178
Puerto Rican	16.7*	48
Mexican	8.0	25
Other Hispanics	15.4	39

* $p < .05$

** $p < .01$

Table 3

Self-Rated Distress Level

	Means	S.D
All Asians	2.65	1.187
Vietnamese	3.12**	1.252
Filipino	2.21*	0.955
Chinese	3.08**	0.986
Other Asians	1.79**	1.062
All Hispanics	2.46	1.166
Cuban	2.39*	1.156
Puerto Rican	2.83	1.136
Mexican	2.64	1.254
Other Hispanics	2.15*	1.089

* $p < .05$

** $p < .01$

Table 4

12-month Major Depressive Episode and Self-rated Distress

	DMS-IV Major Depressive Episode (12mo), N= 498	Self-rated 1 to 5 Distress level (5=highest distress level), N=498
Demographics	Percentage of Depressed	Mean Distress Level
Gender		
Female	9.6*	2.63*
Male	4.9*	2.42*
Marital Status		
Married	4.3**	2.49
Divorced/separated/widowed	13.9**	2.67
Never married	0	2.14
Work Status		
Employed	3.8	2.08**
Unemployed	8.7	2.70**

* $p < .05$

** $p < .01$

Table 5

Logistic Regression Models: 12-month Major Depression Episode

	Control Model				**Acculturative Stress Model**				**Acculturative Stress + Family Support Model**				**Acculturative Stress + Friend Support Model**			
	Model A				**Model B**				**Model C**				**Model D**			
	Coef.	S.E	Sig.	OR	Coef.	S.E	Sig.	OR	Coef.	S.E	Sig.	OR	Coef.	S.E	Sig.	OR
Constant	.931	1.980	.638	2.537	-.849	2.184	.698	.428	-.878	2.237	.695	.416	-.540	2.236	.809	.583
Age	-.035	.027	.184	.965	-.022	.027	.418	.978	-.020	.029	.474	.980	-.025	.028	.372	.975
Female	.367	.402	.362	1.443	.485	.411	.237	1.625	.600	.422	.155	1.821	.618	.424	.145	1.855
Asian	**-1.107**	**.519**	**.033**	**.331**	**-1.15**	**.522**	**.028**	**.318**	**-1.50**	**.562**	**.007**	**.222**	**-1.40**	**.531**	**.008**	**.247**
Divorced	.620	.420	.140	1.859	.585	.423	.166	1.795	.539	.432	.211	1.715	.590	.430	.170	1.804
Never married	-18.59	8459.5	.998	.000	-18.7	8375	.998	.000	-18.7	8326	.998	.000	-18.6	8208	.998	.000
Employed	-.515	.553	.352	.597	-.480	.560	.391	.619	-.399	.568	.482	.671	-.488	.568	.390	.614
Household Size	-.308	.193	.111	.735	-.291	.195	.134	.747	-.333	.204	.102	.717	-.370	.203	.068	.690
Household income	.000	.000	.501	1.000	.000	.000	.592	1.000	.000	.000	.697	1.000	.000	.000	.849	1.000
Verbal Fluency in English	-.217	.254	.394	.805	-.105	.261	.688	.901	-.090	.259	.728	.914	-.125	.262	.633	.882
Acculturative Stress					**.231**	**.116**	**.046**	**1.260**	.208	.116	.073	1.231	.217	.115	.060	1.242
Family Support									**-.387**	**.198**	**.051**	**.679**				
Friend Support													**-.444**	**.185**	**.017**	**.642**
-2loglikelihood				227.8				223.9				215.6				216.3
Cox & Snell R-sq				0.069				0.076				0.082				.09
X^2				35.23				39.1				41.69				45.99
N=				495				495				490				490

Table 5 (Continued)

Logistic Regression Models: 12-month Major Depression Episode

	Acculturative Stress + Emotional Support Model				**Acculturative Stress + Family Cohesion Model**				**Acculturative Stress + Family Support +Family Cohesion Model**				**Acculturative Stress + Emotional Support +Family Cohesion Model**			
	Model E				**Model F**				**Model G**				**Model H**			
	Coef.	S.E	Sig.	OR	Coef.	S.E	Sig.	OR	Coef.	S.E	Sig.	OR	Coef.	S.E	Sig.	OR
Constant	-.488	2.264	.829	.614	2.233	2.390	.350	9.325	2.158	2.506	.389	8.654	2.083	2.491	.403	8.028
Age	-.025	.029	.382	.975	-.016	.028	.568	.984	-.018	.029	.524	.982	-.022	.029	.463	.979
Female	.695	.430	.106	2.005	.665	.426	.118	1.945	.685	.432	.113	1.983	.775	.438	.077	2.171
Asian	**-1.643**	**.559**	**.003**	**.193**	**-1.062**	**.526**	**.044**	**.346**	**-1.182**	**.572**	**.039**	**.307**	**-1.407**	**.566**	**.013**	**.245**
Divorced	.549	.435	.207	1.732	.382	.433	.377	1.465	.359	.440	.414	1.431	.373	.443	.399	1.453
Never married	-18.727	8179.5	.998	.000	-18.8	8354	.998	.000	-18.87	8357	.998	.000	-18.83	8274	.998	.000
Employed	-.408	.571	.474	.665	-.265	.567	.640	.767	-.236	.571	.679	.790	-.251	.573	.662	.778
Household Size	-.390	.209	.062	.677	-.297	.200	.138	.743	-.325	.206	.115	.722	-.362	.211	.086	.696
Household income	.000	.000	.869	1.000	.000	.000	.690	1.000	.000	.000	.745	1.000	.000	.000	.879	1.000
Verbal Fluency in English	-.107	.260	.681	.899	-.250	.274	.362	.779	-.227	.275	.409	.797	-.221	.273	.419	.802
Acculturative Stress	.204	.115	.076	1.227	.194	.119	.104	1.214	.193	.120	.107	1.213	.189	.119	.111	1.208
Emotional Support	**-.540**	**.204**	**.008**	**.583**									-.376	.216	.081	.687
Family Support									-.156	.224	.486	.856				
Family Cohesion					**-.298**	**.092**	**.001**	**.742**	**-.275**	**.102**	**.007**	**.760**	**-.246**	**.099**	**.013**	**.782**
-2loglikelihood				210.5				213.8				208.3				204.3
Cox & Snell pseudo R-sq				0.091				0.095				0.095				0.102
X^2				46.1				49.3				48.9				52.4
N=				486				495				490				486

Table 6

Logistic Regression Models of 12 month Major Depression Episode: Interaction Terms

	Acculturative X Asian Model				**Family Cohesion X Asian Model**				**Emotional Support X Asian Model**				**Neighborhood Social Cohesion X Asian Model**			
	Model AI				**Model BI**				**Model CI**				**Model DI**			
	Coef.	S.E	Sig.	OR	Coef.	S.E	Sig.	OR	Coef.	S.E	Sig.	OR	Coef.	S.E	Sig.	OR
Constant	-.767	2.213	.729	.465	2.07	2.40	.390	7.89	-.540	2.31	.815	.583	.092	2.5	.970	1.1
Age	-.024	.028	.394	.977	-.017	.028	.545	.983	-.025	.029	.399	.976	-.038	.030	.209	.962
Female	.444	.413	.282	1.56	.616	.426	.148	1.85	.684	.437	.118	1.98	.324	.422	.443	1.38
Divorced	.609	.423	.150	1.84	.385	.432	.372	1.47	.546	.436	.211	1.73	.527	.441	.232	1.69
Never married	-18.7	8401	.998	.000	-18.9	8370	.998	.000	-18.7	8185	.998	.000	-18.7	8621	.998	.000
Employed	-.475	.562	.397	.622	-.327	.577	.571	.721	-.409	.574	.476	.664	-.476	.568	.402	.621
Household Size	-.293	.195	.133	.746	-.302	.202	.134	.739	-.402	.211	.057	.669	-.289	.200	.148	.749
Household income	.000	.000	.581	1.00	.000	.000	.667	1.00	.000	.000	.813	1.00	.000	.000	.488	1.00
Verbal Fluency in English	-.091	.268	.735	.913	-.218	.279	.435	.804	-.069	.275	.803	.934	-.053	.267	.843	.948
Acculturative Stress	**.234**	**.120**	**.051**	**1.26**	.192	.119	.108	1.2	.203	.115	.078	1.22	.205	.125	.103	1.23
Asian	-1.02	1.102	.354	.360	1.09	3.00	.717	2.97	**-1.40**	**.663**	**.034**	**.246**	.938	2.43	.699	2.56
Acculturative X Asian	-.043	.371	.907	.958												
Emotional Support									**-.613**	**.225**	**.006**	**.542**				
Emotional Support X Asian									.340	.552	.538	1.41				
Family Cohesion					**-.275**	**.096**	**.004**	**.760**								
Family Cohesion X Asian					-.199	.280	.477	.819								
Social Cohesion													.029	.101	.773	1.03
Social Cohesion X Asian													-.204	.254	.422	.816
-2loglikelihood				223.8				213.2				209.7				210.6
Cox & Snell pseudo R-sq				0.076				0.095				0.092				0.066
X^2				38.49				49.069				46.176				31.42
N=				495				495				486				457

Table 6 (Continued)

Logistic Regression Models of 12 month Major Depression Episode: Interaction Terms

	Family Support X Asian Model				**Friend Support X Asian Model**			
	Model EI				**Model FI**			
	Coef.	S.E	Sig.	OR	Coef.	S.E	Sig.	OR
Constant	-.845	2.249	.511	.981	-.772	2.244	.731	.462
Age	-.019	.029	.167	1.796	-.022	.029	.434	.978
Female	.585	.423	.047	.300	.630	.422	.135	1.877
Asian	-1.205	.608	.249	1.651	-1.650	.678	.015	.192
Divorced	.501	.435	.998	.000	.554	.434	.201	1.740
Never married	-18.75	8338	.468	.662	-18.72	8294	.998	.000
Employed	-.412	.568	.098	.710	-.410	.568	.470	.664
Household Size	-.342	.207	.680	1.000	-.331	.205	.106	.718
Household income	.000	.000	.606	.872	.000	.000	.688	1.000
Verbal Fluency in English	-.137	.266	.511	.981	-.080	.263	.761	.923
Acculturative Stress	-.019	.029	.081	1.225	.213	.116	.065	1.238
Friend Support					-.371	.203	.067	.690
Family Support	-.462	.214	.031	.630				
Family Support X Asian	.466	.526	.376	1.593				
Friend Support X Asian					-.226	.614	.712	.797
-2loglikelihood				214.8				213.8
Cox & Snell R-sq				0.083				.084
X^2				42.46				42.8
N=				490				486

Table 7

Linear Regression Models: Self-rated Distress

	Control Model			**Acculturative Stress Model**			**Acculturative Stress + Family Support Model**			**Acculturative Stress + Family Support + Family Cohesion Model**			**Acculturative Stress + Family Support + Family Cohesion+ Social Cohesion Model**		
	Model AM			**Model BM**			**Model CM**			**Model DM**			**Model EM**		
	Coef.	S.E	Sig.	Coef.	S.E	Sig.	Coef.	S.E	Sig.	Coef.	S.E	Sig.	Coef.	S.E	Sig.
Constant	3.839	.550	.000	3.490	.585	.000	3.366	.586	.000	4.227	.708	.000	3.921	.757	.000
Age	-.010	.007	.174	-.008	.008	.281	-.006	.008	.396	-.006	.008	.458	-.004	.008	.596
Female	.071	.105	.499	.089	.105	.398	.131	.107	.222	.141	.107	.188	.082	.110	.455
Asian	.515	.109	.000	.501	.109	.000	.338	.122	.006	.382	.123	.002	.372	.127	.004
Divorced	.063	.119	.595	.064	.119	.592	.061	.119	.606	.020	.120	.868	.034	.125	.789
Never married	-.347	.252	.169	-.362	.252	.151	-.347	.250	.166	-.405	.251	.107	-.439	.257	.088
Employed	-.446	.129	.001	-.446	.129	.001	-.422	.129	.001	-.399	.129	.002	-.373	.133	.005
Household Size	-.057	.038	.141	-.054	.038	.164	-.053	.038	.166	-.051	.038	.185	-.052	.039	.183
Household income	.000	.000	.101	.000	.000	.112	.000	.000	.150	.000	.000	.122	.000	.000	.122
Verbal Fluency in English	-.296	.056	.000	-.268	.058	.000	-.248	.059	.000	-.257	.058	.000	-.251	.060	.000
Acculturative Stress				.063	.037	.089	.057	.037	.122	.049	.037	.191	.049	.039	.205
Family Support							-.163	.055	.003	-.131	.057	.022	-.127	.060	.034
Family Cohesion										-.079	.037	.032	-.077	.038	.045
Social Cohesion													.023	.027	.405
N=			494			489			489			489			459

Table 7 (Continued)

Linear Regression Models: Self-rated Distress

	Acculturative Stress + Friend Support Model			Acculturative Stress + Emotional Support Model			Acculturative Stress + Family Cohesion Model			Acculturative Stress + Emotional Support + Family Cohesion Model			Acculturative Stress + Emotional Support + Family Cohesion+ Social Cohesion Model		
	Model FM			Model GM			Model HM			Model IM			Model JM		
	Coef.	S.E	Sig.	Coef.	S.E	Sig.	Coef.	S.E	Sig.	Coef.	S.E	Sig.	Coef.	S.E	Sig.
Constant	3.393	.591	.000	3.327	.589	.002	4.587	.690	.000	4.183	.704	.000	3.856	.751	.000
Age	-.007	.008	.391	-.006	.008	.002	-.006	.007	.387	-.005	.008	.544	-.004	.008	.581
Female	.114	.106	.284	.130	.107	.002	.115	.105	.276	.144	.107	.177	.089	.110	.417
Asian	.420	.113	.000	.329	.120	.002	.516	.108	.000	.364	.121	.003	.352	.125	.005
Divorced	.070	.119	.560	.066	.119	.002	.010	.119	.933	.022	.120	.855	.050	.126	.690
Never married	-.340	.251	.176	-.334	.250	.002	-.437	.251	.082	-.396	.251	.115	-.413	.257	.109
Employed	-.419	.129	.001	-.414	.129	.002	-.407	.129	.002	-.390	.129	.003	-.366	.133	.006
Household Size	-.066	.039	.087	-.063	.038	.002	-.050	.038	.187	-.059	.038	.122	-.060	.039	.130
Household income	.000	.000	.155	.000	.000	.002	.000	.000	.089	.000	.000	.139	.000	.000	.146
Verbal Fluency in English	-.254	.058	.000	-.244	.059	.002	-.274	.058	.000	-.252	.058	.000	-.247	.060	.000
Acculturative Stress	.061	.037	.099	.059	.037	.002	.051	.037	.174	.050	.037	.179	.054	.039	.170
Friend Support	-.129	.053	.015												
Emotional Support				-.174	.055	.002				-.150	.056	.008	-.156	.060	.010
Family Cohesion							-.104	.035	.003	-.080	.036	.028	-.080	.038	.035
Social Cohesion													.033	.028	.234
N=			489			490			494			485			456

Appendix I-III

Correlation Matrix I

		Depressed	Distressed	Female	Asian	Age	Emply.	Verbal Fluency in English	Household Size	Household income	Married	Divorced, separate or widowed	Nvr. married
Depressed	Pearson Correlation	1											
	Sig. (2-tailed)												
Distressed	Pearson Correlation	.169**	1										
	Sig. (2-tailed)	.000											
Female	Pearson Correlation	.087	.088*	1									
	Sig. (2-tailed)	.051	.049										
Asain	Pearson Correlation	-.164**	.084	-.096*	1								
	Sig. (2-tailed)	.000	.062	.032									
Age	Pearson Correlation	-.002	.069	.059	-.020	1							
	Sig. (2-tailed)	.967	.121	.185	.652								
Employed	Pearson Correlation	-.081	-.234**	-.163**	.054	-.38**	1						
	Sig. (2-tailed)	.069	.000	.000	.231	.000							
Verbal Fluency in English	Pearson Correlation	-.101*	-.245**	-.133**	.297**	-.113*	.199**	1					
	Sig. (2-tailed)	.024	.000	.003	.000	.012	.000						
Household size	Pearson Correlation	-.116**	-.023	-.036	.234**	-.092*	.055	-.033	1				
	Sig. (2-tailed)	.009	.615	.421	.000	.040	.221	.465					
Household income	Pearson Correlation	-.102*	-.225**	-.201**	.222**	-.24**	.41**	.461**	.077	1			
	Sig. (2-tailed)	.022	.000	.000	.000	.000	.000	.000	.086				
Married	Pearson Correlation	-.150**	-.052	-.321**	.250**	-.19**	.168**	.128**	.288**	.261**	1		
	Sig. (2-tailed)	.001	.246	.000	.000	.000	.000	.004	.000	.000			
Divorced, separated or widowed	Pearson Correlation	.179**	.083	.299**	-.25**	.209**	-.196**	-.150**	-.258**	-.243**	-.914**	1	
	Sig. (2-tailed)	.000	.064	.000	.000	.000	.000	.001	.000	.000	.000		
Never married	Pearson Correlation	-.059	-.070	.070	-.017	-.029	.057	.044	-.087	-.058	-.262**	-.153**	1
	Sig. (2-tailed)	.187	.115	.120	.704	.518	.204	.322	.051	.195	.000	.001	

Appendix II

Correlation Matrix II

		Depressed	Distressed	Vietnamese	Filipino	Chinese	All other Asians	Cuban	Puerto Rican	Mexican	All other Hispanics
Depressed	Pearson Correlation	1									
	Sig. (2-tailed)										
Distressed	Pearson Correlation	.169**	1								
	Sig. (2-tailed)	.000									
Vietnamese	Pearson Correlation	-.067	.195**	1							
	Sig. (2-tailed)	.132	.000								
Filipino	Pearson Correlation	-.093*	-.113*	-.161**	1						
	Sig. (2-tailed)	.038	.011	.000							
Chinese	Pearson Correlation	-.040	.151**	-.129**	-.132**	1					
	Sig. (2-tailed)	.371	.001	.004	.003						
All other Asians	Pearson Correlation	-.063	-.143**	-.089*	-.091*	-.073	1				
	Sig. (2-tailed)	.157	.001	.047	.041	.103					
Cuban	Pearson Correlation	.046	-.092*	-.294**	-.302**	-.242**	-.167**	1			
	Sig. (2-tailed)	.309	.040	.000	.000	.000	.000				
Puerto Rican	Pearson Correlation	.116**	.082	-.129**	-.132**	-.106*	-.073	-.242**	1		
	Sig. (2-tailed)	.010	.068	.004	.003	.018	.103	.000			
Mexican	Pearson Correlation	.005	.020	-.091*	-.093*	-.075	-.051	-.170**	-.075	1	
	Sig. (2-tailed)	.904	.660	.042	.037	.095	.251	.000	.095		
All other Hispanics	Pearson Correlation	.089*	-.095*	-.115**	-.118**	-.095*	-.065	-.216**	-.095*	-.067	1
	Sig. (2-tailed)	.047	.033	.010	.008	.034	.145	.000	.034	.137	

Appendix III

Correlation Matrix III

		Depressed	Distressed	Acculturative Stress	Family Support	Friend Support	Emotional Support	Family Cohesion	Social Cohesion
Depressed	Pearson Correlation	1							
	Sig. (2-tailed)								
Distressed	Pearson Correlation	.170**	1						
	Sig. (2-tailed)	.000							
Acculturative Stress	Pearson Correlation	.114*	.150**	1					
	Sig. (2-tailed)	.011	.001						
Family Support	Pearson Correlation	-.017	-.217**	-.109*	1				
	Sig. (2-tailed)	.709	.000	.016					
Friend Support	Pearson Correlation	-.065	-.198**	-.088	.493**	1			
	Sig. (2-tailed)	.152	.000	.051	.000				
Emotional Support	Pearson Correlation	-.045	-.238**	-.112*	.866**	.862**	1		
	Sig. (2-tailed)	.325	.000	.014	.000	.000			
Family Cohesion	Pearson Correlation	-.220**	-.137**	-.121**	.203**	.049	.147**	1	
	Sig. (2-tailed)	.000	.002	.007	.000	.274	.001		
Social Cohesion	Pearson Correlation	-.025	-.045	-.185**	.248**	.264**	.296**	.313**	1
	Sig. (2-tailed)	.596	.335	.000	.000	.000	.000	.000	